REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 7, 16 and 22 are requested to be cancelled without prejudice. Claims 1, 9-12 and 15 are currently being amended. Claims 27-29 are being added. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1, 4-6, 8, 9-12, 15, 19-21 and 23-29 are now pending in this application.

Claim Objections

On page 2 of the Office Action the combination of Claims 15, 16 and 9 were objected to, but the Examiner stated that this combination would be allowable if rewritten in independent form including all of the limitations of the combination of Claims 15, 16 and 9. Applicant respectfully requests clarification as to whether the Examiner meant the combination of Claims 15, 16 and 19 rather than Claims 15, 16 and 9. Applicant thanks the Examiner for the indication of allowable combinations of claims.

Claims 10-12 were objected to for certain informalities. Applicant has made the appropriate corrections. Accordingly, withdrawal of the objection to Claims 10-12 is respectfully requested.

Rejections under 35 U.S.C. 103

On pages 2-3 of the Office Action, Claims 1, 4-7, 9-10, 12, 15, 19-20 and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over "CORBA Delays in Software-Defined Radio", by Bertrand et al. (Bertrand) in view of U.S. Publication No. 2002/0199031

(Rust) and in further view of "Implementation of a WNW within the JTRS Operating Environment Using Networking APIs", by Anderson et al. (Anderson).

Independent Claims 1 and 10

With respect to Claims 1 and 10, the Examiner stated that Bertrand teaches:

> an apparatus that implements services for a waveform application, the apparatus comprising: an object request broker (CORBA^{TM} object request broker, page 153, left col., line 16) that marshals data from the waveform application for communication (page 1152, Fig. 1 and page 155, left col., lines 58-61).

However, the Examiner acknowledged that Bertrand does not disclose:

> wherein at least a portion of the object request broker is implemented in hardware;

> wherein the portion of the object request broker implemented in hardware is an application specific integrated circuit (ASIC); and

> an object request broker interface that communicates the marshaled data using a memory pool.

The Examiner stated that Rust discloses:

> wherein at least a portion of the object request broker is implemented in hardware (paragraph [0059]); wherein the portion of the object request broker implemented in hardware is an application specific integrated circuit (ASIC) (Paragraph [0059]).

The Examiner stated that Anderson discloses:

> An object request broker interface (commercial Object Request Brokers (ORBs), Fig. 6) that communicates the marshaled data using a memory pool (used pointers to shared memory to address transport delays, transfer methods supported by ORBs, page 975, right col., lines, 36-48, upgrade to shared memory approach used in Rockwell Collins Link 16 port to the JTRS SCA under JTRS Step 2b, left col., lines 29-31).

The Examiner concluded that:

> It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified the ORB of Bertrand with the teachings of Common Object Request Broker Architecture from Rust because this feature would have provided a mechanism for implementing component objects and appropriate interfaces in a component software architecture such as the Object Management Group's Common Object Request Broker Architecture which can be supplemented by, or incorporated in, ASICs (paragraph [0059] of Rust).
>
> ....
>
> It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have further modified the ORB communication mechanism of Bertrand as modified by Rust with the teachings of shared memory from Anderson because this feature would have further provided a mechanism to address the transport delays of the CORBA^{TM} call copying of data (Page 975, right col., lines 36-42 of Anderson).

Applicant respectfully traverses the rejection.

Independent Claims 1 and 10, as amended, would not have been obvious in view of Bertrand, alone or in any proper combination with Rust and/or Anderson under 35 U.S.C. § 103(a). Bertrand alone or in any proper combination with Rust and/or Anderson does not disclose, teach or suggest, in combination with other elements, "the portion ... implemented in hardware comprises a **programmable** application specific integrated circuit" as recited in Claims 1 and 10. (See present application at paragraph [0017]).

As acknowledged by the Examiner Bertrand does not mention the possibility of any type of ASIC implementation. Anderson does not cure the deficiency of Bertrand because Anderson also does not mention the possibility of any type of ASIC implementation. Further, Applicant respectfully submits that Rust does not cure the deficiencies of Bertrand and Anderson. Paragraph [0059] of Rust states that (emphasis added):

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[0059] **The invention can be implemented** in digital electronic circuitry, or in computer hardware, firmware, software, or in combinations of them. Apparatus of the invention can be implemented …. **The invention can be implemented** …. **The custom objects of the invention can be implemented** as component objects implementing an appropriate interface or interfaces in a component software architecture such as Microsoft Corporation's Component Object Model (COM) or Distributed Component Object Model (DCOM) or NET standards, or the Object Management Group's Common Object Request Broker Architecture (CORBA) standard, or the Simple Object Access Protocol (SOAP) or related HTTP based protocols…. Any of the foregoing can be supplemented by, or incorporated in, ASICs (application-specific integrated circuits).

While an ASIC implementation is suggested for the **custom objects of the invention** in Rust, this is not a suggestion to implement a "portion of the object request broker" or a "portion of the object request broker interface" as "a programmable application specific integrated circuit" as recited in Claim 1. Further, paragraph [0059] of Rust is not a suggestion to implement a "portion of the marshalling data from the waveform application" or a "portion of the interfacing the marshaled data" as "a programmable application specific integrated circuit" as recited in Claim 10.

Thus, Bertrand taken alone, or in any proper combination with Anderson and/or Rust, does not disclose, teach or suggest "the portion … implemented in hardware comprises a **programmable** application specific integrated circuit" as recited in Claims 1 and 10. To transform Bertrand, Rust and Anderson into the subject matter recited in Claims 1 and 10 would require still further modification, and such modification is taught only by the Applicant's own disclosure.

Thus, independent Claims 1 and 10, considered as a whole, would not have been obvious in view of Bertrand, Rust and/or Anderson. The rejection of Claims 1 and 10 over Bertrand in view of Rust and/or Anderson under 35 U.S.C. § 103(a) is improper. Therefore, Claims 1 and 10 are patentable over Bertrand in view of Rust and/or Anderson.

Dependent Claims 4-6 and 9, which depend from independent Claim 1, are also patentable for at least the same reasons as Claim 1. Dependent Claim 12, which depends from independent Claim 10, is also patentable for at least the same reasons as Claim 10.

With respect to dependent Claims 9 and 12, Applicant respectfully submits that it would not have been obvious in view of <u>Bertrand</u>, alone or in any proper combination with <u>Rust</u> and/or <u>Anderson</u> under 35 U.S.C. § 103(a). <u>Bertrand</u> alone or in any proper combination with <u>Rust</u> and/or <u>Anderson</u> does not disclose, teach or suggest, in combination with other elements, "an operating system protocol stack ... wherein the operating system protocol stack is implemented in hardware" as recited in Claims 9 and 12.

On page 5 of the Office Action, the Examiner stated that "Bertrand teaches ... wherein the at least a portion of the object request broker interface that is implemented in hardware comprises an operating system protocol stack (software stack, Fig. 1, Fig. 4)." Figures 1 and 4 of <u>Bertrand</u> show a software stack comprising various layers of software stacked on top of one another. <u>Bertrand</u> is a software implementation of a software stack. (Bertrand at page 152, right col., lines 1-23). <u>Bertrand</u> does not mention the possibility of implementing **any stack in hardware**.

<u>Anderson</u> does not cure the deficiencies of <u>Bertrand</u>. Although <u>Anderson</u> states "that a waveform typically includes multiple Open Systems Interconnect (OSI) protocol layers for an over-the-air protocol stack," <u>Anderson</u> does not mention the possibility of implementing **any stack in hardware**. (Anderson at page 972 footnote).

<u>Rust</u> does not cure the deficiencies of <u>Bertrand</u> or <u>Anderson</u>. <u>Rust</u> does not mention the possibility of implementing an operating system protocol stack in hardware. Further, <u>Rust</u> does not even mention an operating system protocol stack.

Thus, <u>Bertrand</u> taken alone, or in any proper combination with <u>Anderson</u> and/or <u>Rust</u>, does not disclose, teach or suggest "wherein the operating system protocol stack is implemented

in hardware" as recited in Claims 9 and 12. To transform <u>Bertrand</u>, <u>Rust</u> and <u>Anderson</u> into the subject matter recited in Claims 9 and 12 would require still further modification, and such modification is taught only by the Applicant's own disclosure.

Thus, Claims 9 and 12, considered as a whole, would not have been obvious in view of <u>Bertrand</u>, <u>Rust</u> and/or <u>Anderson</u>. The rejection of Claims 9 and 12 over <u>Bertrand</u> in view of <u>Rust</u> and/or <u>Anderson</u> under 35 U.S.C. § 103(a) is improper. Therefore, Claims 9 and 12 are patentable over <u>Bertrand</u> in view of <u>Rust</u> and/or <u>Anderson</u>.

Independent Claim 15

With respect to Claim 15, the Examiner stated:

> Bertrand teaches the invention substantially as claimed including a system for a joint tactical radio system (JTRS) compliant device that provides communication at low power requirements, the system comprising:
>
> an object request broker (ORB) (CORBA^{TM} object request broker, page 153, left col., line 16) that marshals data from a waveform application (page 152, Fig. 1 and page 155, left col., lines 58-61);
>
> a pluggable protocol interface (e.g., ease of technology insertion, CORBA^{TM} hides details of the hardware architecture, let col., lines 30-44) that communicates the marshaled data from the hardware-implemented ORB (CORBA^{TM} middleware, can perform a data format translation, converting data to a format appropriate to the receiving, left col., lines 5-7).

However, the Examiner acknowledged that <u>Bertrand</u> does not disclose:

> wherein at least a portion of the object request broker is implemented in hardware rather than software;
>
> wherein the portion of the object request broker implemented in hardware is an application specific integrated circuit (ASIC);
>
> wherein at least a portion of the pluggable protocol interface is implemented in hardware; and

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> a memory pool that communicates data from the pluggable
> protocol interface directly and without transport overhead.

The Examiner stated that <u>Rust</u> discloses:

> wherein at least a portion of the object request broker is
> implemented in hardware rather than software (paragraph [0059]);
> wherein the portion of the object request broker implemented in
> hardware is an application specific integrated circuit (ASIC)
> (Paragraph [0059]) and wherein at least a portion of the pluggable
> protocol interface is implemented in hardware (paragraph [0059]).

The Examiner stated that <u>Anderson</u> discloses:

> a memory pool (e.e. shared memory) that communicates data from
> the pluggable protocol interface directly and without transport
> overhead (CORBA^{TM} call copying of data used pointers to shared
> memory to address transport delays, transfer methods supported by
> ORBs, page 975, right col., lines 36-48, upgrade to shared memory
> approach used in Rockwell Collins Link 16 port to the JTRS SCA
> under JTRS Step 2b, left col., lines 29-31).

The Examiner concluded that:

> It would have been obvious to a person of ordinary skill in the art
> at the time the invention was made to have modified the ORB of
> Bertrand with the teachings of Common Object Request Broker
> Architecture from Rust because this feature would have provided a
> mechanism for implementing component objects and appropriate
> interfaces in a component software architecture such as the Object
> Management Group's Common Object Request Broker
> Architecture which can be supplemented by, or incorporated in,
> ASICs (paragraph [0059] of Rust).
>
> ....
>
> It would have been obvious to a person of ordinary skill in the art
> at the time the invention was made to have further modified the
> ORB communication mechanism of Bertrand as modified by Rust
> with the teachings of shared memory from Anderson because this
> feature would have further provided a mechanism to address the

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transport delays of the CORBA^{TM} call copying of data (Page 975, right col., lines 36-42 of Anderson).

Applicant respectfully traverses the rejection.

Independent Claim 15, as amended, would not have been obvious in view of <u>Bertrand</u>, alone or in any proper combination with <u>Rust</u> and/or <u>Anderson</u> under 35 U.S.C. § 103(a). <u>Bertrand</u> alone or in any proper combination with <u>Rust</u> and/or <u>Anderson</u> does not disclose, teach or suggest, in combination with other elements, "wherein the at least a portion of the pluggable protocol interface and the ORB implemented in hardware comprise logic and data formatting functions of the ORB that are determined to consume excessive processor throughput for a specific software application and an interface to a shared memory pool" or "wherein the logic and data formatting functions are implemented as a programmable application specific integrated circuit (ASIC)" as recited in Claim 15, as amended. The deficiencies of <u>Bertrand</u>, <u>Rust</u> and <u>Anderson</u> are not cured by <u>Klein</u>.

With respect to a portion the subject matter added to Claim 15, the Examiner stated that:

> It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have further modified the ORB of Bertrand as further modified by Anderson with the teachings of customized logic functions from Klein because this feature would have further provided a mechanism for customizing logic functions to the desired application to obtain a more compact, lower power, and higher performance solution (paragraph [0007] of Klein).

Applicant respectfully disagrees with the Examiner's interpretation of the teaching of <u>Klein</u>. Paragraph [0008] of <u>Klein</u> states that "[w]hat is needed is a logic circuit that substantially departs from the limitations of ASICs, FPGAs, and CPUs." Applicant respectfully submits that one of ordinary skill in the art at the time of the invention, taking <u>Klein</u> as a whole, would not have been motivated by <u>Klein</u> to implement logic functions as ASICs because <u>Klein</u> teaches a substantial departure from such implementations. Furthermore, the ASIC implementations rejected by <u>Klein</u> are not the same as "wherein the logic and data formatting functions are

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implemented as a **programmable** application specific integrated circuit" as recited in Claim 15, as amended. (See paragraph [0017] of the present application).

To transform <u>Bertrand</u>, <u>Rust</u> and <u>Anderson</u> into the subject matter recited in Claim 15, as amended, would require still further modification, and such modification is taught only by the Applicant's own disclosure.

Thus, independent Claim 15, considered as a whole, would not have been obvious in view of <u>Bertrand</u>, <u>Rust</u> and/or <u>Anderson</u>. The rejection of Claim 15 over <u>Bertrand</u> in view of <u>Rust</u> and/or <u>Anderson</u> under 35 U.S.C. § 103(a) is improper. Therefore, Claim 15 is patentable over <u>Bertrand</u> in view of <u>Rust</u> and/or <u>Anderson</u>.

Dependent Claims 19-20, which depend from independent Claim 15, are also patentable for at least the same reasons as Claim 15.

<u>Dependent Claims 8, 11, 16, 21 and 23-26</u>

On page 8 of the Office Action, Claims 8, 11 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over <u>Bertrand</u> in view of <u>Rust</u> and in further view of <u>Anderson</u> as applied to Claims 1, 10 and 15 above, and further in view of U.S. Publication No. 2004/0019765 (<u>Klein</u>).

Claim 16 is requested to be cancelled without prejudice. Claim 8 depends from independent Claim 1 and is allowable for at least the same reasons as Claim 1. Claim 11 depends from Claim 10 and is allowable for at least the same reasons as Claim 10.

Applicant respectfully requests withdrawal of the rejection of Claims 1, 4-6, 8-12, 15 and 19-20 under 35 U.S.C. § 103(a).

On page 10 of the Office Action, Claims 21 and 23-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over <u>Bertrand</u> in view of <u>Rust</u> and in further view of <u>Anderson</u> as

applied to Claims 1, 10 and 15 above, and further in view of "Application of a Multi-Processor SoC Platform to High-Speed Packet Forwarding", Paulin et al (Paulin).

Paulin was filed on February 16, 2004. Attached is a declaration under 37 C.F.R. 1.131 ("Rule 131 Declaration") showing conception of the subject matter of Claims 21, 23-26 prior to February 16, 2004 along with diligence in reduction to practice from before February 16, 2004 until the filing date of February 27, 2004 of the present application. It is respectfully submitted that claims 21 and 23-26 are allowable over Paulin since Paulin does not qualify as prior art under 35 U.S.C. §§ 102-103 based on the Rule 131 Declaration submitted herewith.

Accordingly, Applicant respectfully requests withdrawal of the rejection of Claims 21 and 23-26 under 35 U.S.C. § 103(a).

New Claims

Claims 27-29 depend from independent Claim 15 and are allowable for at least the same reasons as Claim 15.

With respect to Claim 27, none of the references cited by the Examiner (Bertrand, Rust, Anderson, Klein or Paulin) disclose, teach or suggest "wherein the JTRS compliant device is in an unmanned ground sensor" as recited in Claim 27.

With respect to Claim 28, none of the references cited by the Examiner (Bertrand, Rust, Anderson, Klein or Paulin) disclose, teach or suggest a "wherein the JTRS compliant device is in a missile" as recited in Claim 28.

With respect to independent Claim 29, none of the references cited by the Examiner (Bertrand, Rust, Anderson, Klein or Paulin) disclose, teach or suggest "wherein the operating system protocol stack is implemented in hardware" as recited in Claim 29.

Since none of the references cited by the Examiner (<u>Bertrand</u>, <u>Rust</u>, <u>Anderson</u>, <u>Klein</u> or <u>Paulin</u>) disclose, teach or suggest the limitation of Claims 27-29, Applicant respectfully requests allowance of Claims 27-29 as presented.

<div align="center">*   *   *</div>

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date __ August 13, 2008 _____ By ___ / Karl F. Reichenberger / _____

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